

What is claimed is:

1. A spectrometer assembly comprising:

5 a base plate;

a magnetic section mounted on the base plate and having an exit portion; and

10 a focal plane section disposed in front of the exit portion of the magnetic section, the focal section comprising an ion detector array assembly of a first printed circuit board mounted on the base plate and having traces, and an ion detector array attached to the first printed circuit board, the ion detector array having a plurality of ion sensing elements,  
15 wherein more than one of the ion sensing elements of the ion detector array are electrically connected to respective traces of the first printed circuit board directly or indirectly, thus rendering said respective traces active traces.

20 2. A spectrometer assembly as defined in claim 1, wherein the first printed circuit board further comprises a connector selected from a group of direct connector and indirect connector, the connector adaptable to connect or connecting active traces of the first printed circuit board with the input of a circuitry selected from a multiplexer  
25 and a combination of a multiplexer/amplifier.

3. A spectrometer assembly as defined in claim 1, wherein the ion detector array is a strip charge detector array.

30 4. A spectrometer assembly as defined in claim 1,

wherein the ion detector array is a faraday cup detector array.

5           5.       A spectrometer assembly as defined in claim 1,  
wherein the ion detector array is a shift register based direct ion detection  
chip.

          6.       A spectrometer assembly as defined in claim 2,  
wherein the ion detector array is a strip charge detector array.

10           7.       A spectrometer assembly as defined in claim 2,  
wherein the ion detector array is a faraday cup detector array.

          8.       A spectrometer assembly as defined in claim 2,  
wherein the ion detector array is a shift register based direct ion detection  
15 chip.

          9.       A spectrometer assembly as defined in claim 1,  
wherein the first printed circuit board further comprises a circuit selected  
from a group of a multiplexer and a combination of multiplexer/amplifier  
20 connected to active traces of said first printed circuit board.

          10.      A spectrometer assembly as defined in claim 9,  
wherein the ion detector array is a strip charge detector array.

25           11.      A spectrometer assembly as defined in claim 9,  
wherein the ion detector array is a faraday cup detector array.

          12.      A spectrometer assembly as defined in claim 9, further  
comprising a shield partially surrounding the first printed circuit board.  
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13. A spectrometer assembly as defined in claim 1, further comprising at least one additional printed circuit board disposed substantially parallel to and in the vicinity of the first printed circuit board and comprising a circuitry selected from multiplexer, amplifier, and  
5 combination of multiplexer/amplifier.

14. A spectrometer assembly as defined in claim 13, wherein the ion detector array is a strip charge detector array.

10 15. A spectrometer assembly as defined in claim 13, wherein the ion detector array is a faraday cup detector array.

16. A spectrometer assembly as defined in claim 13, further comprising a shield partially surrounding all printed circuit boards.

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17. A device comprising a mass spectrometer of the Mattauch and Herzog type, the mass spectrometer comprising:

a base plate;

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an ionizer mounted on the base plate;

an electrostatic energy analyzer in front of the ionizer and mounted on the base plate;

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a magnetic section mounted on the base plate and having an exit portion; and

a focal plane section disposed in front of the exit portion of  
30 the magnetic section, the focal section comprising an ion detector array

assembly of a first printed circuit board mounted on the base plate and having traces, and an ion detector array attached to the first printed circuit board, the ion detector array having a plurality of ion sensing elements, wherein more than one of the ion sensing elements of the ion detector  
5 array are electrically connected to respective traces of the first printed circuit board directly or indirectly, thus rendering said respective traces active traces.

18. A device as defined in claim 17, wherein the ion  
10 detector array is selected from a group of strip charge detector array, faraday cup detector array, and shift register based direct ion detection chip.

19. A device as defined in claim 17, wherein the first  
15 printed circuit board further comprises a circuit selected from a group of a multiplexer and a combination of multiplexer/amplifier connected to active traces of said first printed circuit board.

20. A device as defined in claim 19, wherein the assembly  
20 further comprises a shield partially surrounding the first printed circuit board.

21. A device as defined in claim 17, wherein the assembly  
further comprises at least one additional printed circuit board disposed  
25 substantially parallel to and in the vicinity of the first printed circuit board and comprising a circuitry selected from multiplexer, amplifier, and combination of multiplexer/amplifier.

22. A device as defined in claim 21, wherein the assembly  
30 further comprises a shield partially surrounding all printed circuit boards.

23. A device as defined in claim 17, further comprising a chromatograph connected to the mass spectrometer.

5 24. A device as defined in claim 18, further comprising a chromatograph connected to the mass spectrometer.

25. A device as defined in claim 19, further comprising a chromatograph connected to the mass spectrometer.

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26. A device as defined in claim 20, further comprising a chromatograph connected to the mass spectrometer.

15 27. A device as defined in claim 21, further comprising a chromatograph connected to the mass spectrometer.

28. A device as defined in claim 22, further comprising a chromatograph connected to the mass spectrometer.